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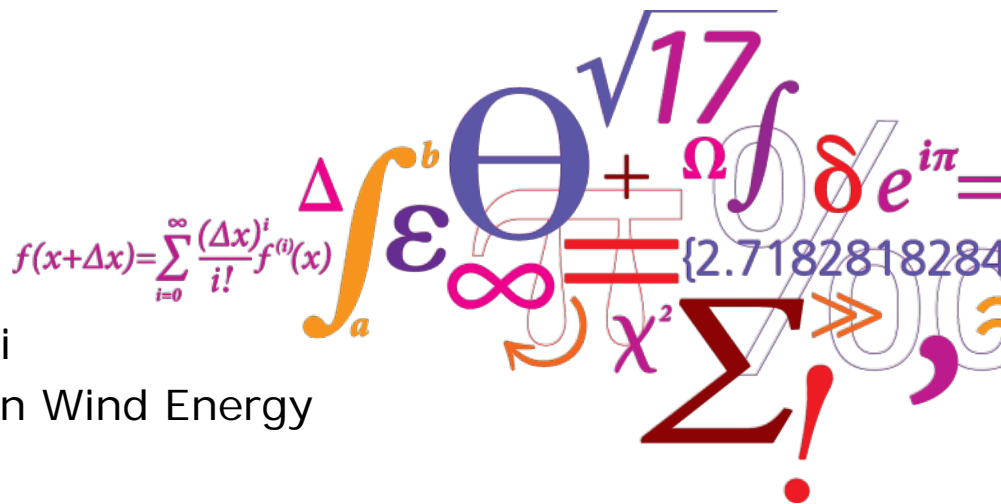


The European Energy Research Alliance (EERA) som instrument i SET-Planen – erfaringerne fra DTU Vindenergi

Peter Hauge Madsen

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Koordinator- EERA Joint Programme on Wind Energy





Outline

- SET-planen og EERA
- EERA Joint Program for Wind Energy
- Konteksten (det danske udgangspunkt)
- Resultater
- Udfordringer – inddragelse af nationale F&U midler
- Afsluttende bemærkninger

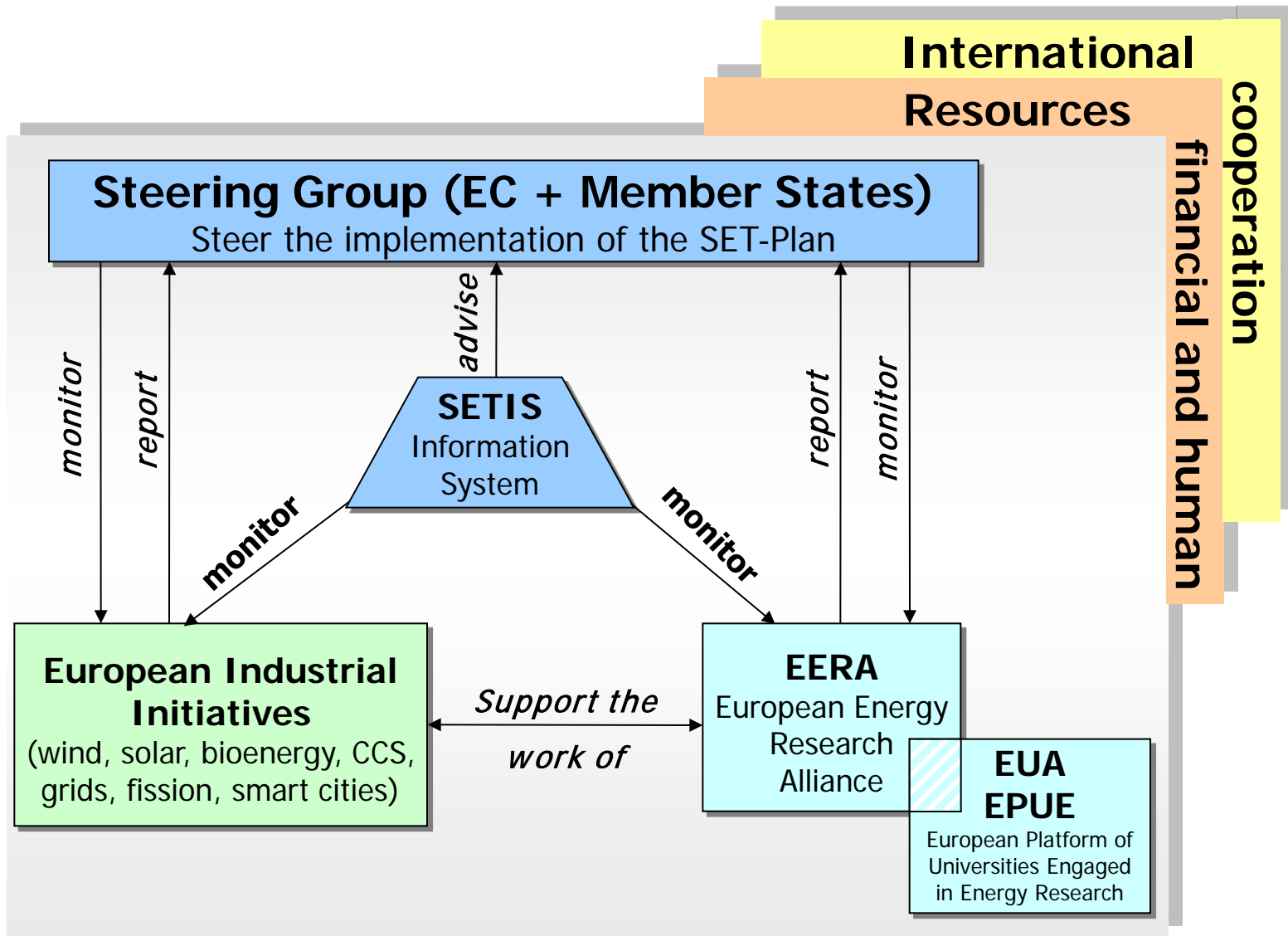


SET Planen – den europæiske kontekst



- **The SET-Plan** adopted in November 2007 is the technology pillar of the EU's energy and climate change policy
- **Objective** is to accelerate the development of low carbon technologies leading to their market take-up
- **The European Energy Research Alliance** was established in 2008 to support the SET-plan.
- **EERA mission and objectives:**
 - Deliver on the objectives of the SET Plan
 - Accelerate development of new energy technologies
 - Improve coordination and cooperation
 - Reduce duplication and fill gaps
 - Increase efficiency and effectiveness

SET-Plan structure





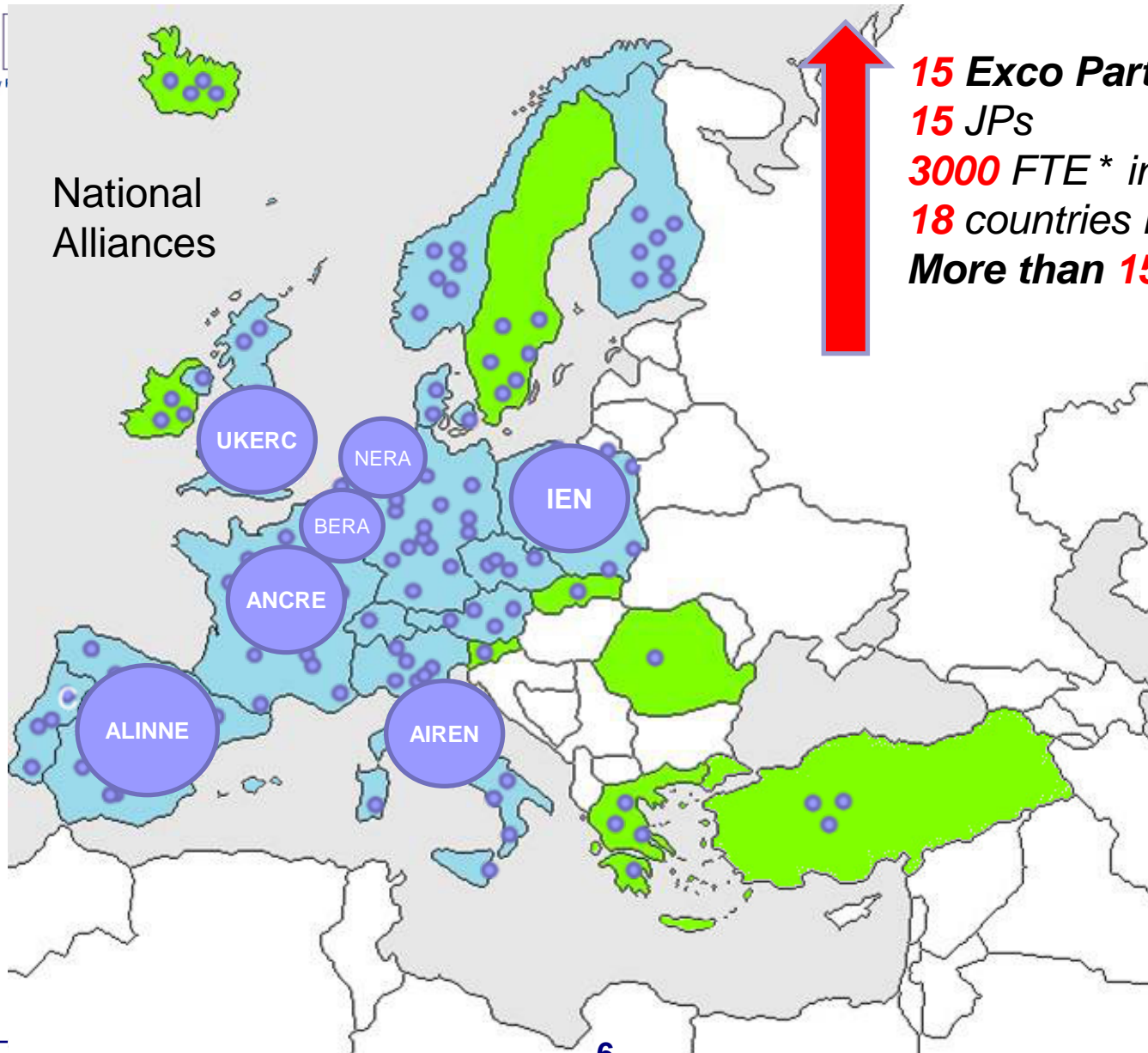
Hvad er EERA?

Alliancesamarbejde mellem forskningsorganisationer på energiområdet

- ✓ I princippet åbent for alle forskningsorganisationer
- ✓ Aktiviteter baseret på deltagernes egne ressourcer, men
 - Komplementeret af midler fra EC
- Langsigtet strategi, arbejdsdeling og ansvarsfordeling
 - EERA "virtual teams" samarbejder om ét emne (specialization)
- ✓ Definition og ekskvering af **Joint Programme**
- ✓ Levere **strategisk robust policy input**
- ✓ Ikke et officielt partnerskab – men officiel samarbejdspartner (label), der høres og bruges af EC. Funding hentes i konkurrence



EERA 2013



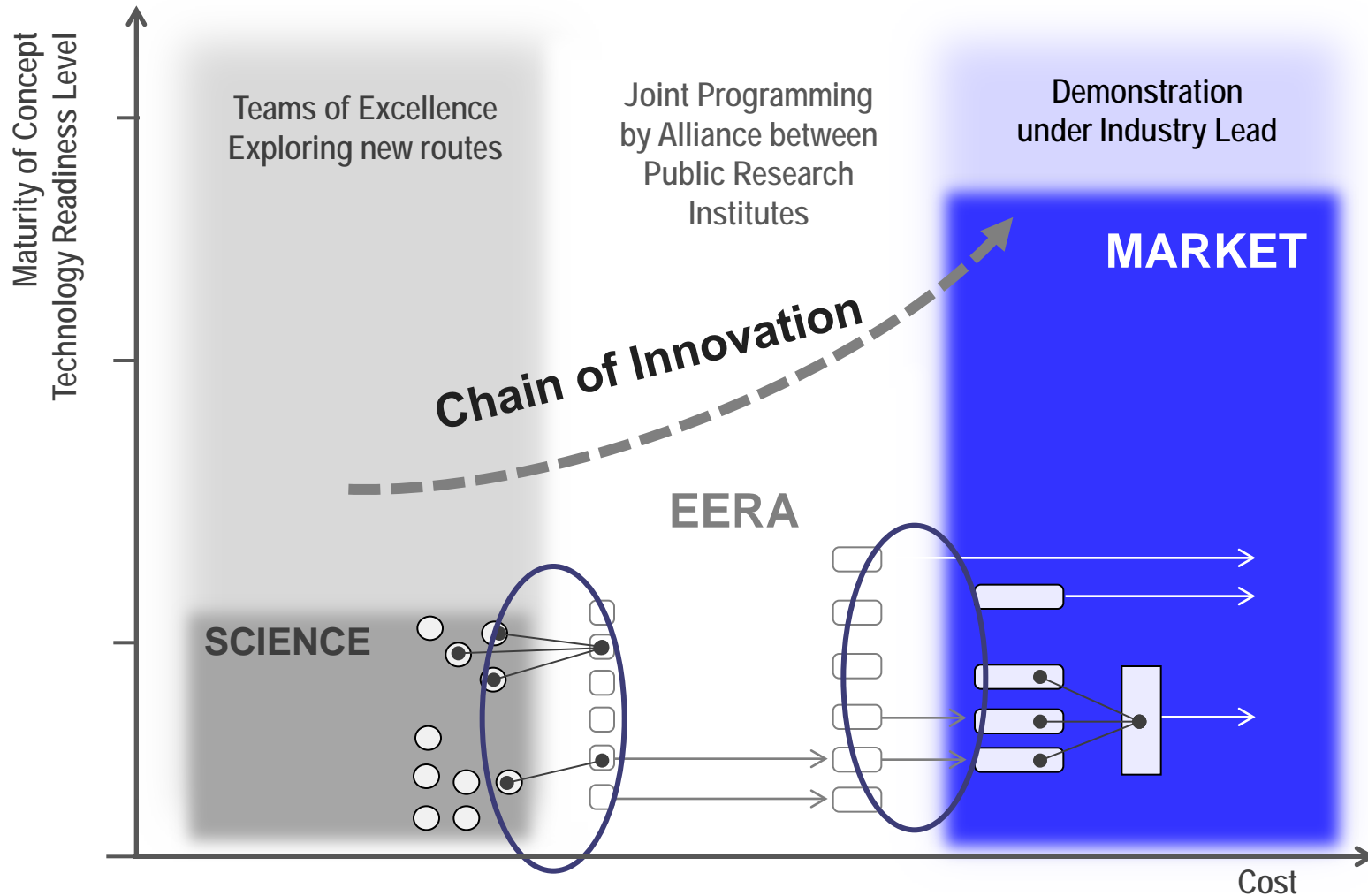
15 Exco Partners

15 JPs

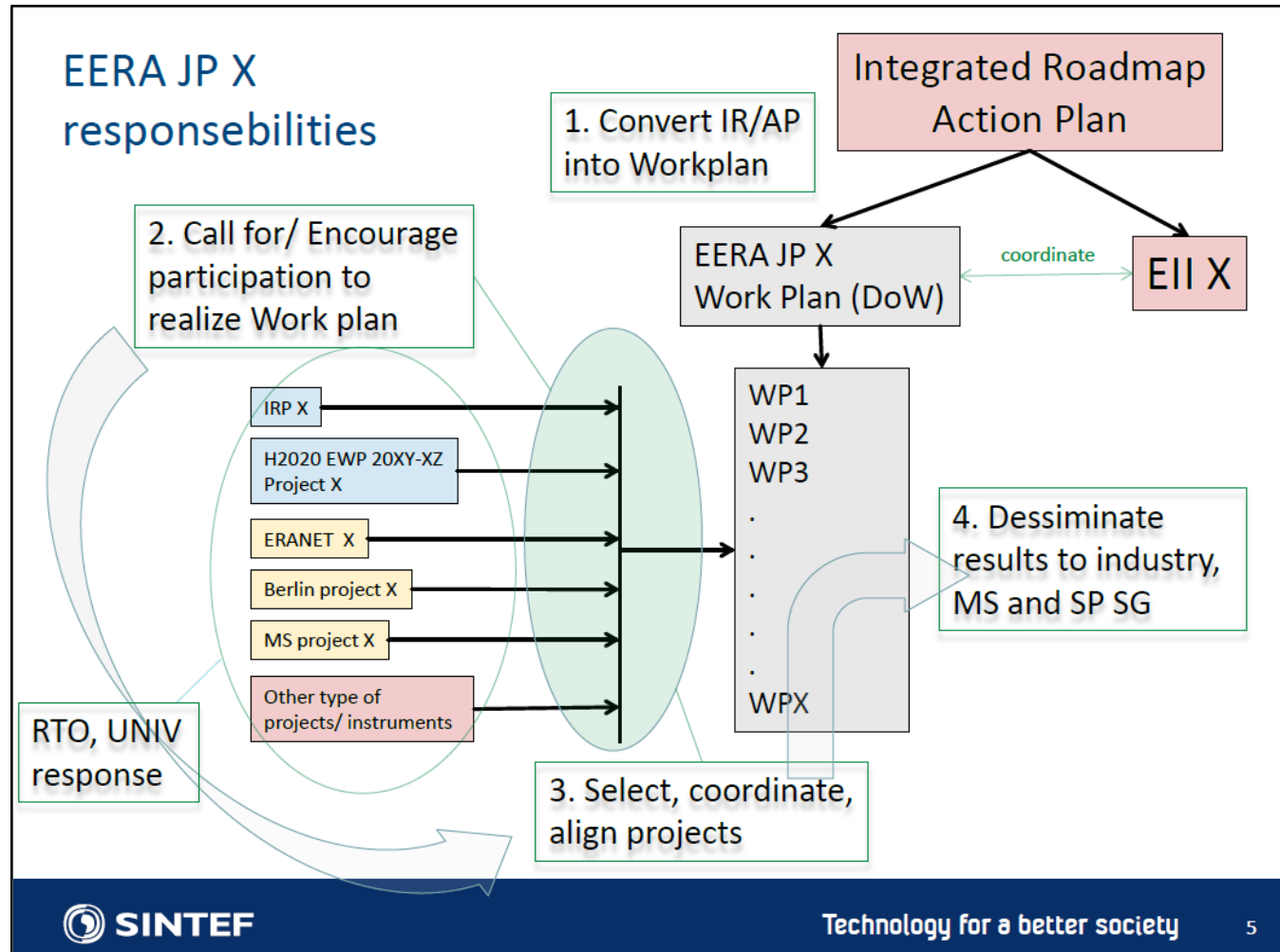
3000 FTE * involved

18 countries involved

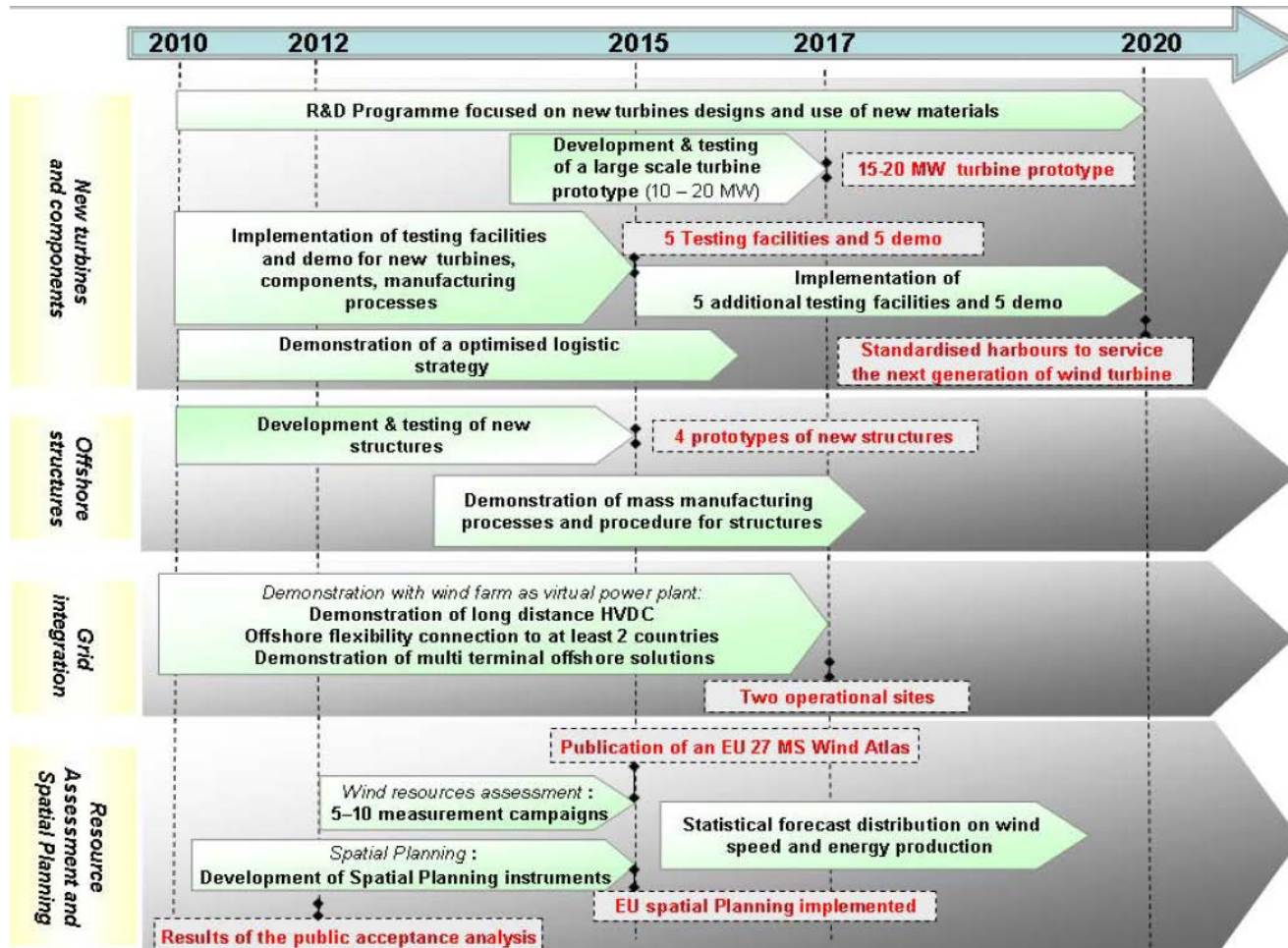
More than 150 RTOs



Funktion og virkemidler



Wind Energy – EC SET-plan



The Joint Programme is strategically directed towards the scientific challenges following the implementation of the SET Plan and the RES Directive:

- **Large scale integration and**
- **An accelerated offshore wind energy deployment, including**
- **Very large offshore wind turbines.**

The EERA joint programme on wind energy accelerates the SET-plan goals, provides the strategic leadership for the scientific–technical medium to long term research to support the EII and the Technology Roadmap’s activities on wind energy and provides added value through:

- Strategic leadership of the underpinning research
- Joint prioritisation of research tasks and infrastructure
- Alignment of European and national research efforts
- Execution of coordinated and structured research in medium to long-term programmes
- Coordination with industry, and
- Sharing of knowledge and research infrastructure.

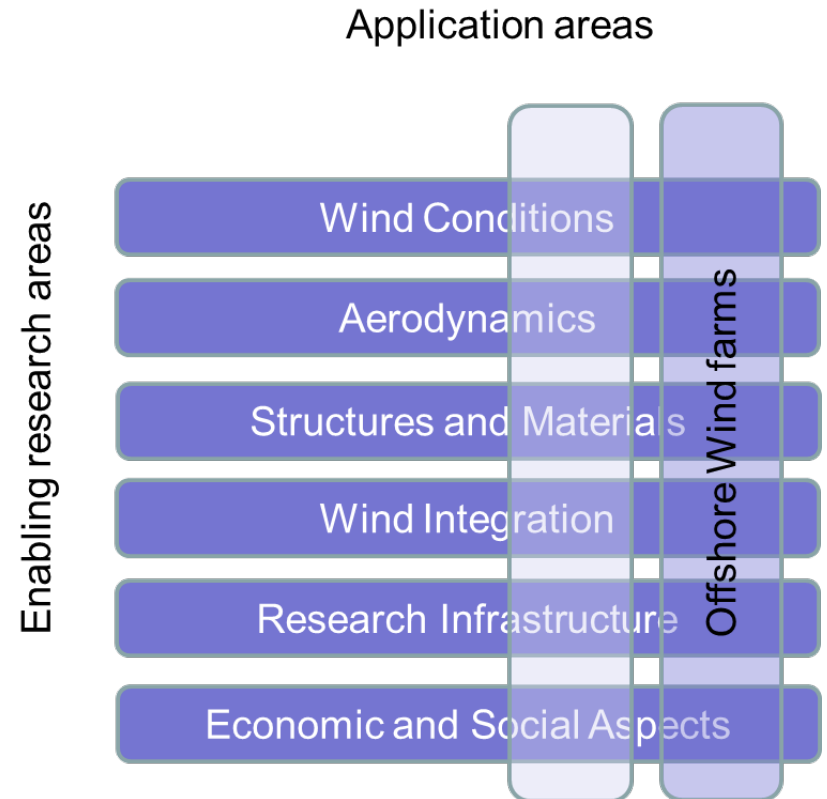
....



- Industry driven
 - Development, test & demonstration
 - Forum, network for the sector
- Research community driven
 - Medium to long-term research
 - Implementation, network
- MoU
 - Both: tools of the SET-Plan (on behalf of European industry and the research community)
 - Legitimate partners to be consulted when EC draft calls
 - EERA in Wind Team since 2011

EERA JP Wind structure

- **Wind Conditions.** Coordinated by DTU in Denmark.
- **Aerodynamics.** Coordinated by ECN in the Netherlands.
- **Offshore Wind Energy.** Coordinated by SINTEF in Norway.
- **Grid Integration.** Coordinated by FhG IWES in Germany.
- **Research Facilities.** Coordinated by CENER in Spain.
- **Structures and Materials.** Coordinated by CRES, Greece
- **Wind Integration – economic and social aspects,** new SP initiated by DTU



EERA Wind Energy Strategy and SAP 2014-2017

Joint Programme on Wind Energy
Strategy 2013-2020



Joint Programme on Wind Energy
Strategic Action Plan 2014-2017



EERA Wind Members

Full participants (Steering Comm.)

DTU Wind Energy	DK
ECN	NL
SINTEF	NO
CRES	GR
CENER	ES
Fraunhofer IWES	GER
Forwind / University of Oldenburg	GER
LNEG	POR
VTT	FI
TUBITAK	TU
University of Strachclyde	UK
CNR	IT
Belgian Energy Research Alliance	BE

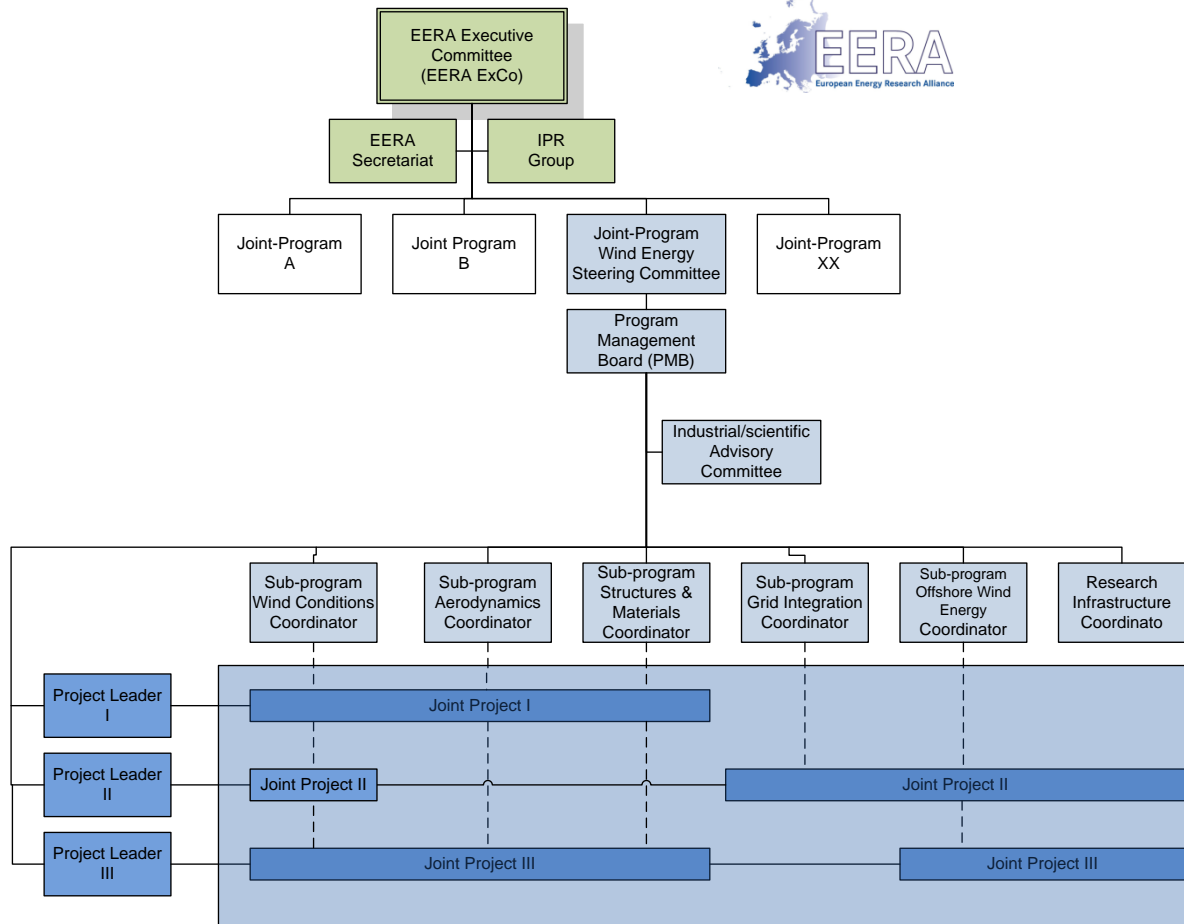
Associated Participants

DHI, University of Aalborg, Dublin (IR)	DK
TU Delft, WMC	NL
NTNU, IFE, UoB , CMR , Marintek	NO
NKUA	GR
CIEMAT, IREC, CTC, CIRCE , Tecnalia , IK4 Alliance , IC3	ES
IEN (PO)	GER
Forwind/University of Bremen, Hannover	GER
University of Porto	POR
METUWIND	
Narec	
ENEA, Politecnico di Milano	IT

13 full participants & 25 associated participants from 14 countries.

Applicants: SINTEF Foundation, DLR and Uni. of Stuttgart

Governance & Coordination



- Virtual centres working as one team on one topic
- Long-term strategy and work plan
- Agreed Description of Work
- Agreed Objectives and Milestones
- Agreed Division of Tasks and Responsibilities
- Context supporting specialisation of Participants

Dansk udgangspunkt

- Ambitiøs energipolitik
- Stærk industriel sektor
- Ekspertise og arbejdspladser
- Førende anvendelse
- Stærk forskningssektor
- Erfaring med internationalt F&U samarbejde



DTU Vindenergis udgangspunkt

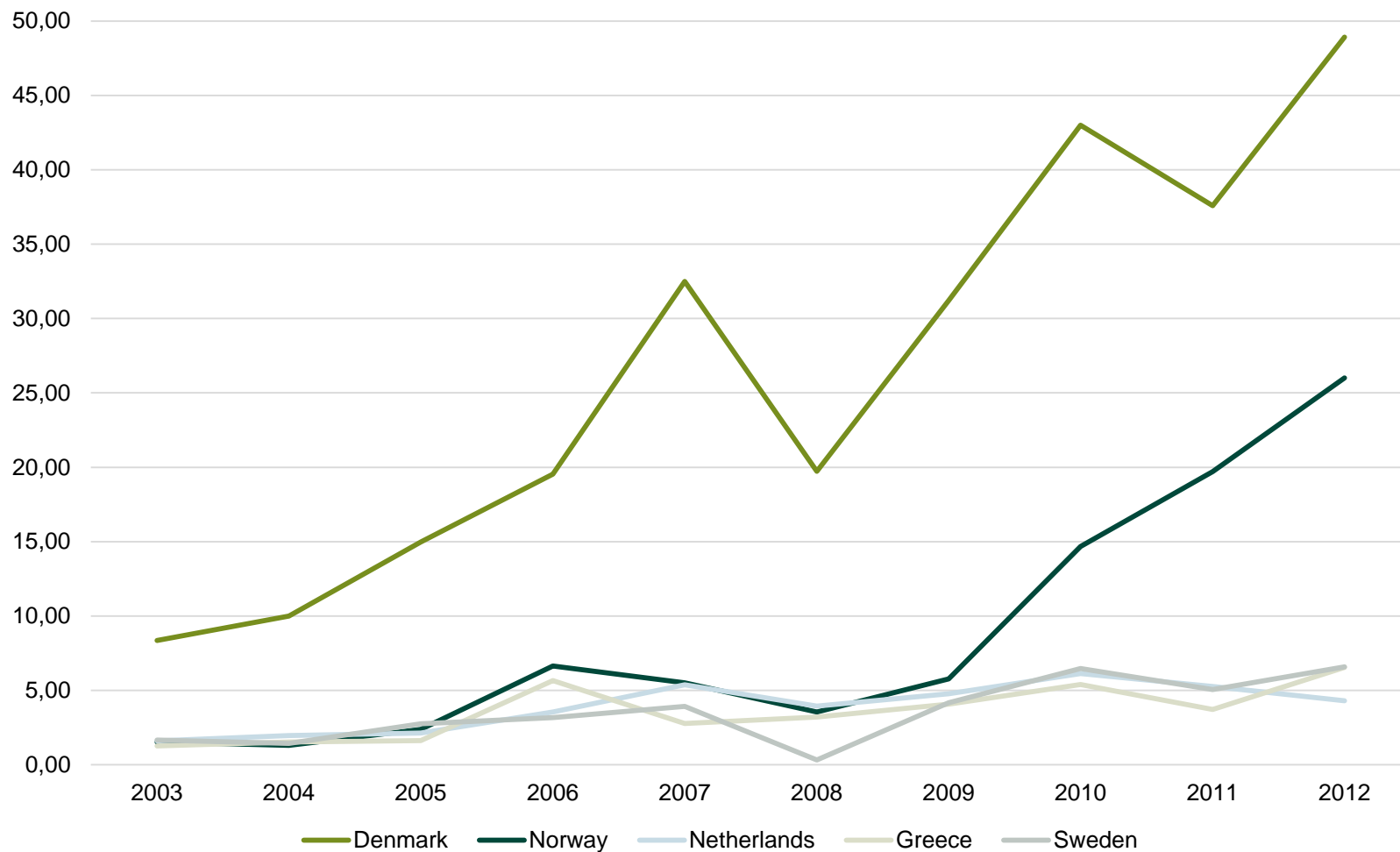
Danmark:

- ▶ Danish Research Consortium for Wind Energy
- ▶ Danish Wind Industry Association
- ▶ Megavind Partnership (public-private cooperation)
- ▶ Danish Standard – S-588 Wind Turbines (IEC, CENELEC)
- ▶ Advisory Committee to the Danish Energy Agency on the Technical Certification Scheme

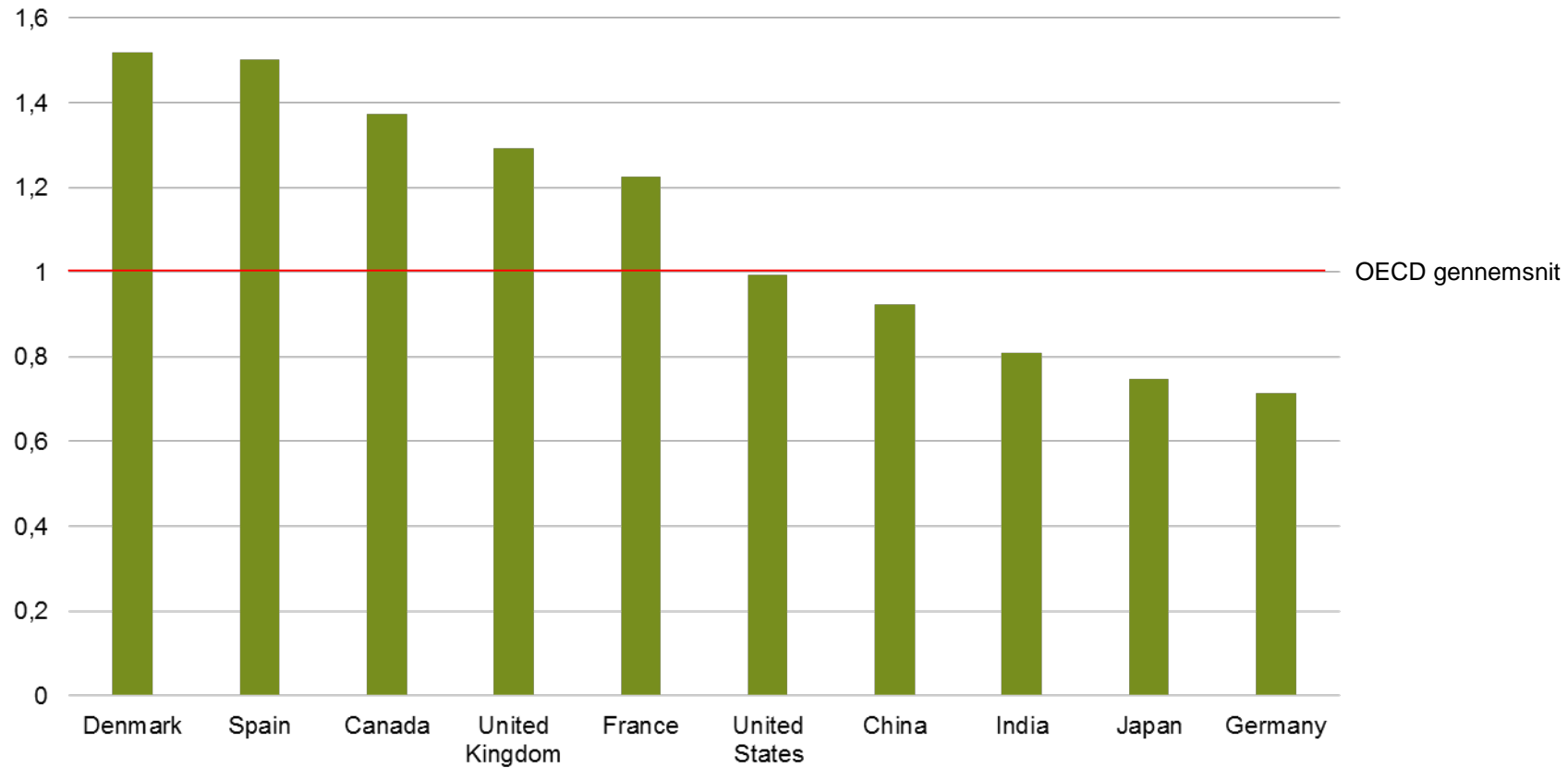
Internationalt:

- ▶ IEA Wind R&D
- ▶ EAWWE – European Academy for Wind Energy
- ▶ EWEA
- ▶ European Wind Energy Technology Platform (EWI)
- ▶ Clean Energy Ministry Initiative (Global wind- and solar atlas)
- ▶ SDC China
- ▶ SEEIT, ISEE
- ▶ International bilateral
- ▶ **EERA – Joint programme on wind energy**

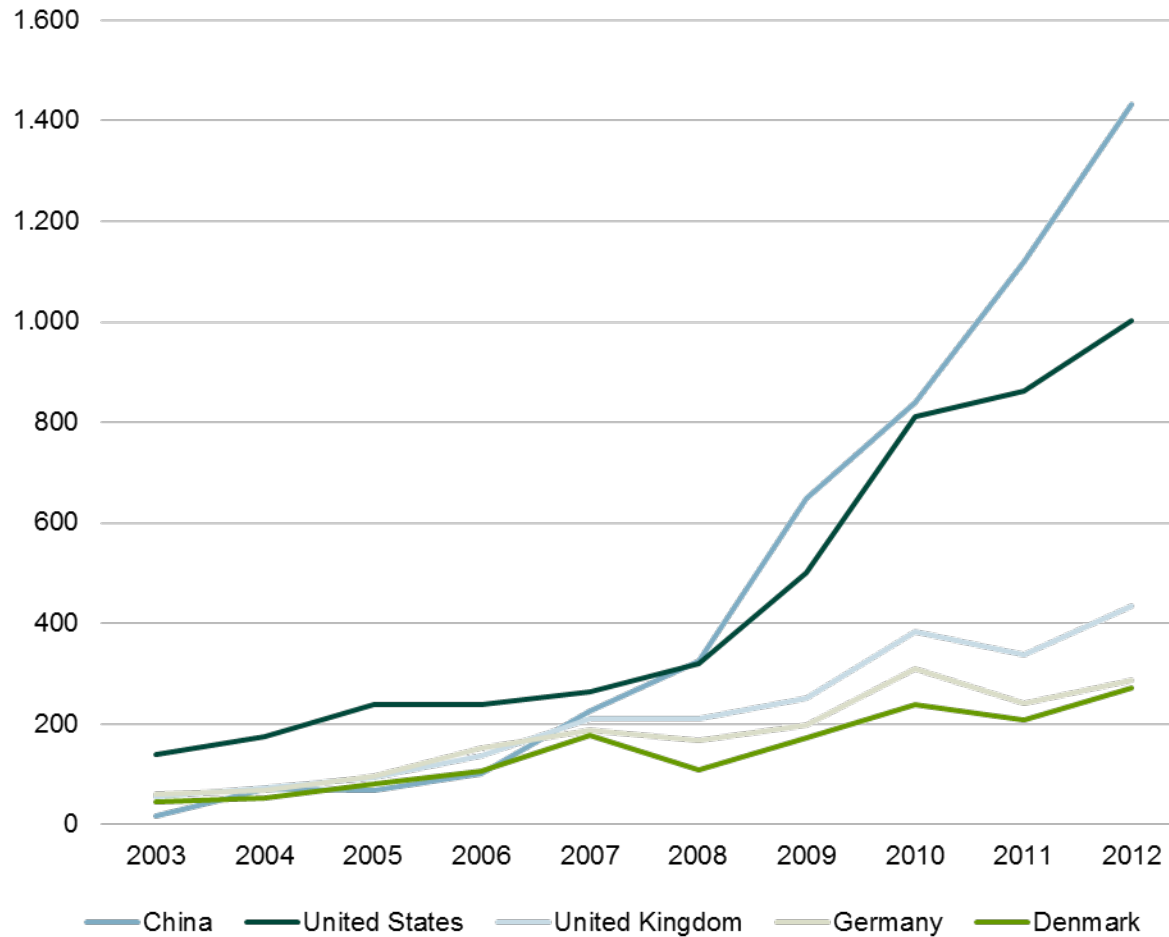
Publikationsvolumen – relativt til befolkning



Impact – gennemsnit 10 år, 2003-2012



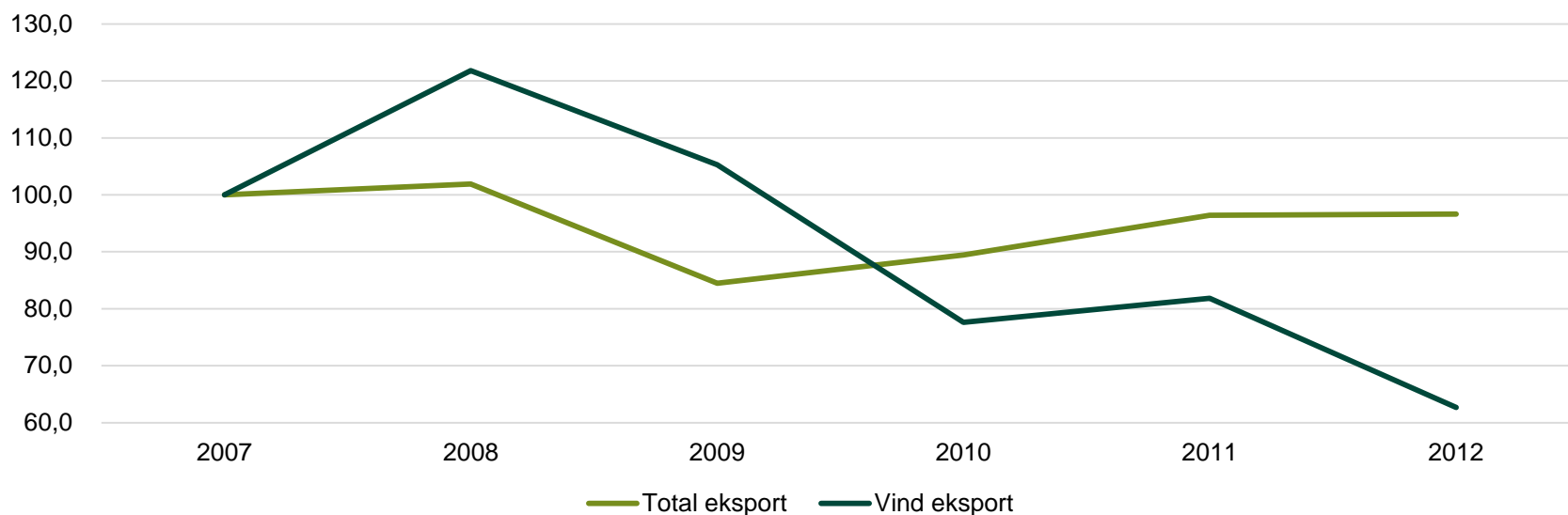
Publikationsvolumen – absolute tal



Hvordan er udviklingen i vindeksporten 2007-2012?

- Dansk eksport af vindprodukter faldende over tid

Figur 1 Udviklingen i den danske vind- og total eksport 2007-2012, indeks (2007=100, baseret på faste priser)



Tabel 1 Den danske vind- og total eksport 2007-2012, faste 2012-priser, mia.

	2007	2008	2009	2010	2011	2012
Total eksport	632,8	644,7	534,6	566,1	610	611,5
Vind eksport	25,9	31,6	27,3	20,1	21,2	16,3
Andel vind	4,10%	4,90%	5,10%	3,60%	3,50%	2,70%

Nøgleresultater EERA JPWE

- ✓ Robust og voksende europæisk program for vindenergi F&U (4 år)
- ✓ Procedurer, struktur og ledelse af deling af viden og ressourcer, ansøgninger og samarbejde
- ✓ Dialog med industri (og nationale forskningsprogrammer) (EII implementation team, MoU TPWind)
- Influerer EU policy making vedr. for R&D inden for energi
 - SET-PLAN Education and Training Exercise
 - SET-PLAN Materials Roadmap Working Group
 - EC hearing on priorities for future Research & Infrastructures calls
 - Actor in the International Cooperation strategy of EU
- ✓ Strategi og handlingsplan der samordner nationale og EU prioriteter
- ✓ Ekspert workshops
- ✓ Deep Sea Offshore Wind R&D Conference: EERA DeepWind 2014
- ✓ EU projects
- ✓ Joint national projects
 - ABYSS (DK-NO), kick-off 2014
 - NSON (NO-UK-DE), kick-off 2014
 - more in progress..

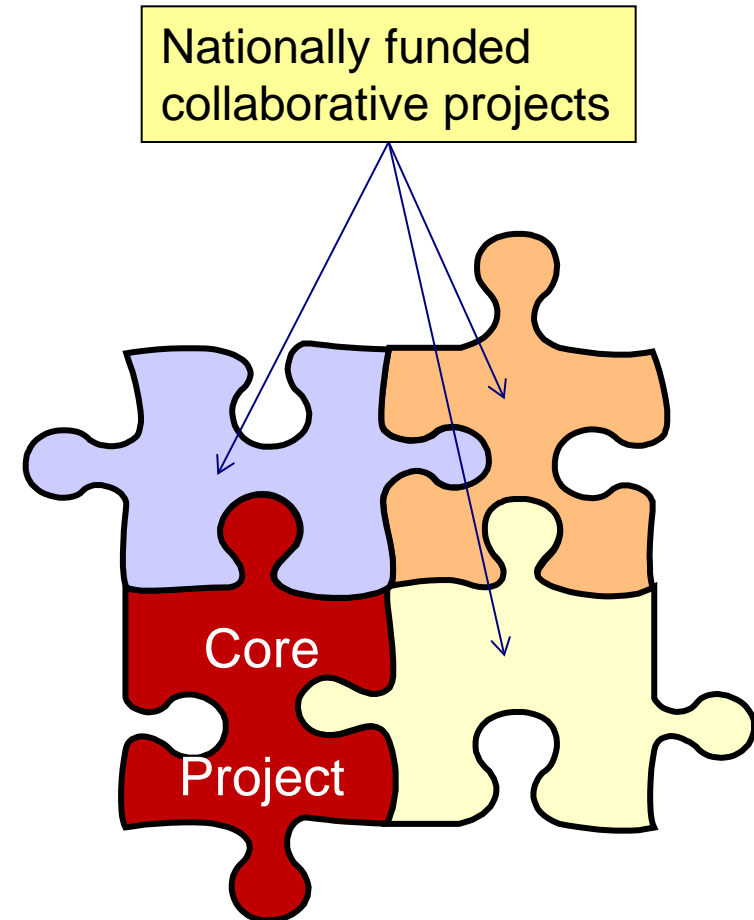
EERA Wind Projects

- **EERA DTOC** – Design Tool for Offshore Clusters (started)
- **European Wind Atlas** (ERA NET+, 2 phase call soon)
- ESFRI European **WindScanner** Facility Preparatory Phase project, (started)
- **Windtrust** (started, led by industry, coord. with EERA)
- **INNWIND.eu** (started)
- **AVATAR** Demonstration of Advanced Aerodynamic Tools on Large-Scale Rotors (started)
- **IRPWIND** (start: 1 march 2014)
 - Coordination and support actions
 - Collaborative projects
- 5 new proposals for Horizon 2020 under development



IRPWIND

- Pilot for Horizon 2020
- A new scheme
- A programme not a project
- Integrating national projects
- Budget: 10 M EUR, 4 years
 - Coordination and support actions (CSA): 4 M EUR
 - Collaborative projects (CP): 6 M EUR
 - a) Structural reliability of wind turbine components
 - b) European measures for large scale integration
 - c) Design of offshore wind farms

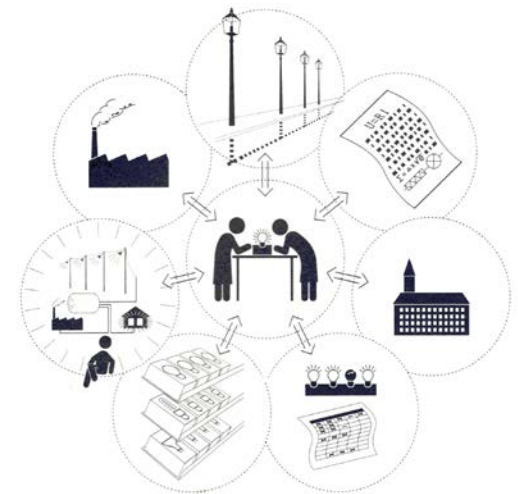


Benefits and Challenges

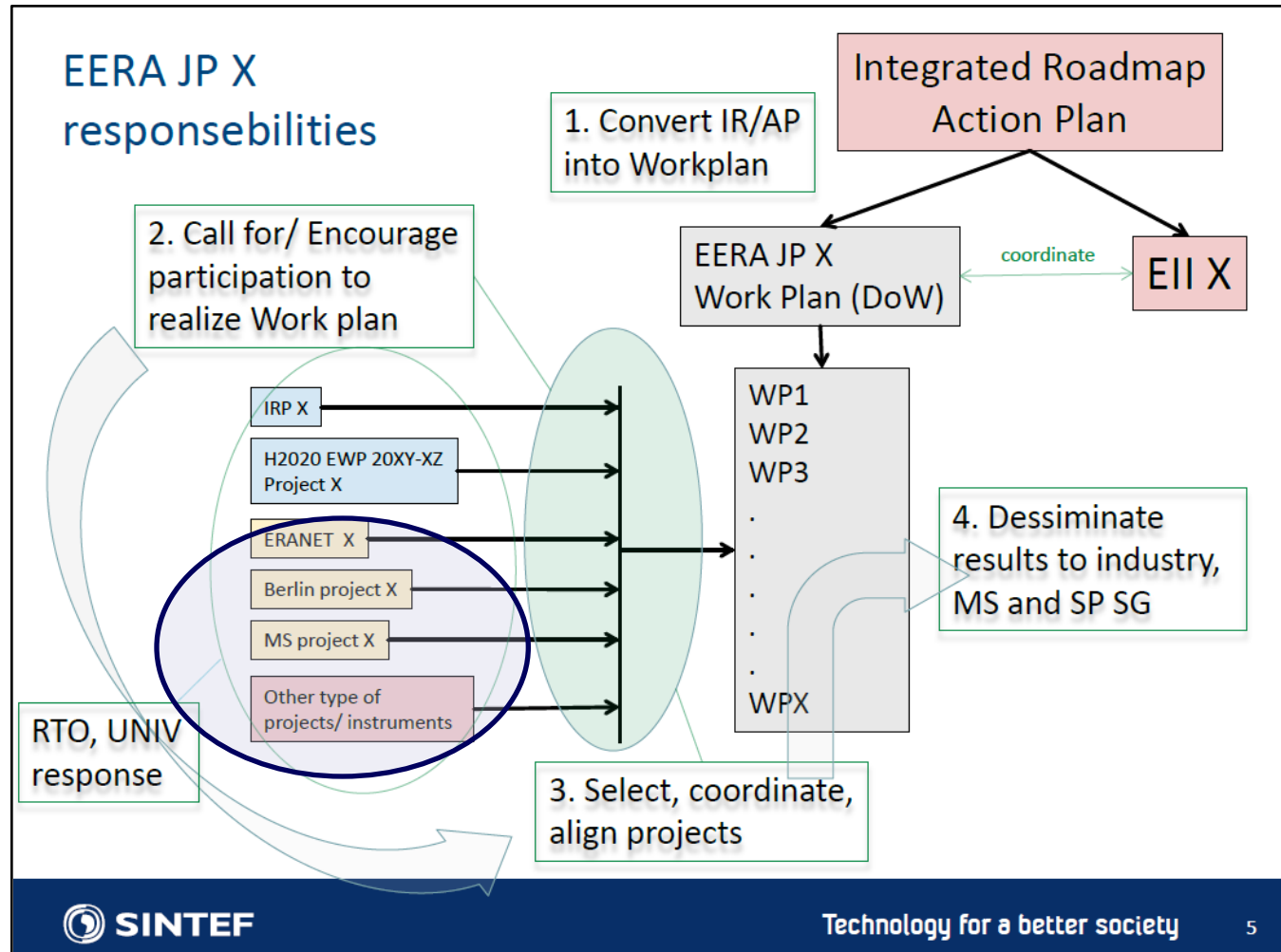
- International sector
- Potential for knowledge and infrastructure sharing
- R&D based on strongest European competences

But

- National priorities
 - Different support levels in member states
 - Synchronization of program calls
 - Decision processes
 - R&D is global – but – jobs are local
-
- ✓ Reality: Not official instrument, have to prove our worth. Funding has to be obtained in competition



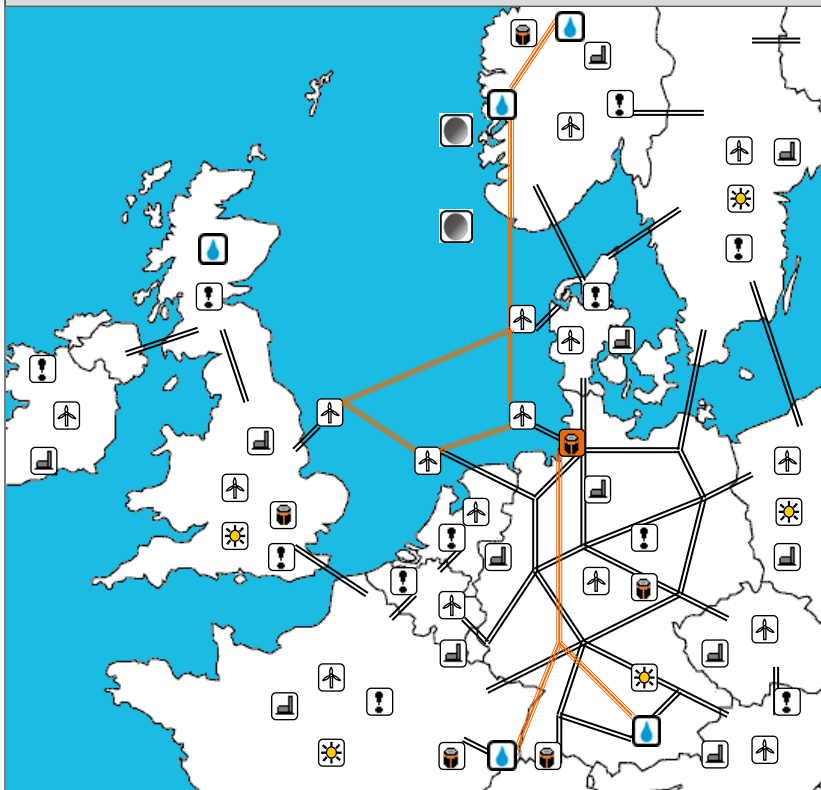
Inddragelse af nationale programmer



NSON - North Sea Offshore Network national proposal submission (SINTEF, UoS, IWES) - initiative to address challenges in a combined effort

European Commission identified offshore grid in the North Sea as a **priority corridor¹⁾**, connecting northern and central Europe

North Sea Offshore and Storage Network (NSON)



NSON initiative is determined to tackle challenges of an offshore grid in the North Sea as a combined effort of Univ. of Strathclyde, SINTEF and Fraunhofer IWES in a pre-project and feasibility phase

Objectives of the NSON initiative's pre-project and feasibility phase:

- Analyzing and evaluating different market and grid design concepts of a NSON and their socio-economic cost-benefit allocation
- Evaluating potential of offshore storage systems in a NSON
- Examining effects of a NSON on European supply system
- Assessing repercussions on onshore grid infrastructure
- Developing reusable mathematic optimization methods for transmission grid planning and operation

¹⁾ European Union (2011): Energy infrastructure priorities for 2020 and beyond. A Blueprint for an integrated European energy network.

ABYSS

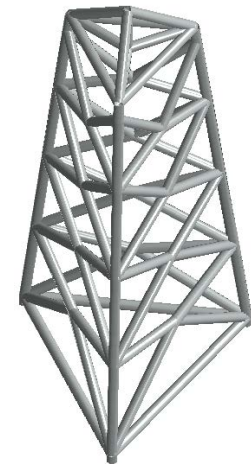
Advancing BeYond Shallow waterS – Optimal design of offshore wind turbine support structures

Acronym: ABYSS (www.abyss.dk opens shortly)

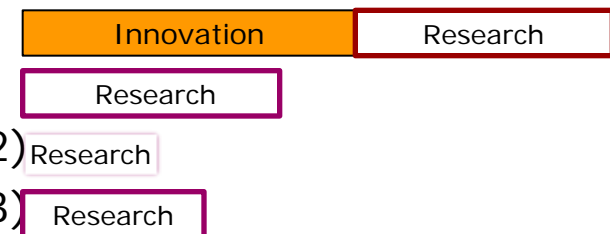
Total budget: 3.6 M€ (27 M DKK)

Duration: 1 January 2014 – 31 December 2017

Main sponsor:  The Danish Council for Strategic Research



Applications: *SPIR* DSF+RTI center (2010).
COWER DSF center (2011).
ABYSS DSF research project (2012)
ABYSS DSF research project (2013)



ABYSS partners and collaboration

- DTU Wind Energy, Denmark
- Aalborg University, Denmark
- DTU Civil Engineering, Denmark
- FE-DESIGN GmbH, Germany
- DONG Energy A/S, Denmark
- Norwegian University of Science and Technology, Norway
- Universal Foundation A/S, Denmark
- SINTEF Energy Research, Norway

International collaboration through

- Direct collaboration in several WPs.
- PhD student exchanges (6 students in total).
- Participation in the Scientific Advisory Group (SINTEF Energy Research).
- Bridgehead for cooperation between ABYSS and NOWITECH partners.
- Jointly organized training events and workshops.



Afsluttende bemærkninger



- Lobby som enkeltperson, institut eller sågar enkelt-universitet bliver stadig sværere.
- Kommissionen ikke (kun) interesseret i det enkelte forskningsprojekt
 - Det skal løse en udfordring, et politisk mål
 - Gå ikke i byen med en enkelt-idé, men med et område/en challenge – og hav de bedste partnere bag dig.
- EERA-modellen viser, at det giver høj troværdighed, når “den samlede Europæiske forskning” på et felt møder op med:
 - Et program der samordner eksisterende aktiviteter hos nøgleaktører
 - En strategi der peger på gaps i den eksisterende indsats – og viser, at man allerede arbejder på at udfylde disse gaps (men yderligere ressourcer er nødvendig for højt ambitionsniveau)
- Direkte adgang til europæiske forskningsmiljøer, deling af viden, ressourcer og resultater
- Hjemtagning af europæiske forskningsmidler





Tak for opmærksomheden